

9. (Twice Amended) A method for identifying a compound that modulates a biological activity of a serotonin-gated anion channel, said method comprising the steps of:

- (a) contacting a cell with a first purified nucleic acid sequence that hybridizes, under conditions comprising hybridization at about 42°C followed by a first wash at about 42°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, and a second wash at about 50°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, to a second nucleic acid sequence comprising the sequence of SEQ ID NO:2, wherein said first nucleic acid sequence encodes a serotonin-gated anion channel that selectively permits passage of anions into or out of said cell in response to binding serotonin, and wherein said first nucleic acid sequence is expressed in said cell;
- (b) administering a test compound to said cell; and
- (c) assaying a modulation in current flux into or out of said cell, wherein a modulation in current flux into or out of said cell, relative to a control cell not contacted with said first nucleic acid sequence, is indicative of a compound that modulates said biological activity of said serotonin-gated anion channel.

11. (Twice Amended) A method for characterizing a drug as being associated with a serotonin-mediated cellular response, said method comprising detecting a modulation in current flux through a purified serotonin-gated anion channel having a polypeptide sequence encoded by a first nucleic acid sequence that hybridizes, under conditions comprising hybridization at about 42°C followed by a first wash at about 42°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, and a second wash at about 50°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, to a second nucleic acid sequence comprising the sequence of SEQ ID NO:2, when said channel is exposed to said drug, wherein said first nucleic acid sequence encodes a serotonin-gated anion channel that selectively permits passage of anions from one side of a membrane to the other in response to binding serotonin, wherein said modulation in current flux is indicative of said drug being associated with a serotonin-mediated cellular response.

20. (Amended) A method for identifying a compound that modulates the activity of a serotonin-gated anion channel, said method comprising the steps of:

- (a) exposing a transgenic nematode that over-expresses a serotonin-gated anion channel encoded by a first purified nucleic acid sequence that hybridizes, under conditions comprising hybridization at about 42°C

followed by a first wash at about 42°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, and a second wash at about 50°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, to a second nucleic acid sequence comprising the sequence of SEQ ID NO:2, wherein said first nucleic acid sequence encodes a serotonin-gated anion channel that selectively permits passage of anions from one side of a membrane to the other in response to binding serotonin, to a test compound;

(b) assaying the locomotion rate of said nematode; and

(c) comparing said locomotion rate to that of a control nematode receiving no test compound, wherein a modulation in said locomotion rate indicates a compound that modulates the activity of a serotonin-gated anion channel.

21. (Amended) A method for identifying a compound that modulates the activity of a serotonin-gated anion channel in a liquid locomotion assay, said method comprising the steps of:

(a) exposing a transgenic nematode that over-expresses a serotonin-gated anion channel encoded by a first purified nucleic acid sequence that hybridizes, under conditions comprising hybridization at about 42°C followed by a first wash at about 42°C in about 6X SSC sodium

chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, and a second wash at about 50°C in about 6X SSC sodium chloride/sodium citrate solution and about 1% Sodium Dodecyl Sulfate, to a second nucleic acid sequence comprising the sequence of SEQ ID NO:2, wherein said first nucleic acid sequence encodes a serotonin-gated anion channel that selectively permits passage of anions from one side of a membrane to the other in response to binding serotonin, to a test compound;

(b) quantifying the number of nematodes actively swimming after exposure to said test compound; and

(c) comparing the number of said actively swimming nematodes to that of control nematodes receiving no test compound, wherein a modulation in said number of actively swimming nematodes indicates a compound that modulates the activity of a serotonin-gated anion channel.

22. (Amended) A method for identifying a compound that modulates a biological activity of a serotonin-gated anion channel, said method comprising the steps of:

(a) contacting a cell with a first purified nucleic acid sequence that hybridizes, under conditions comprising hybridization at about 42°C in about 50% formamide followed by a first wash at about 65°C in about 2X SSC sodium chloride/sodium citrate solution and about 1% Sodium

Dodecyl Sulfate, and a second wash at about 65°C in about 1X SSC sodium chloride/sodium citrate solution and about 0.1% Sodium Dodecyl Sulfate, to a second nucleic acid sequence comprising the sequence of SEQ ID NO:2, wherein said first nucleic acid sequence encodes a serotonin-gated anion channel that selectively permits passage of anions into or out of said cell in response to binding serotonin, and wherein said first nucleic acid sequence is expressed in said cell;

(b) administering a test compound to said cell; and

(c) assaying a modulation in current flux into or out of said cell, wherein a modulation in current flux into or out of said cell, relative to a control cell not contacted with said first nucleic acid sequence, is indicative of a compound that modulates said biological activity of said serotonin-gated anion channel.

23. (Amended) A method for characterizing a drug as being associated with a serotonin-mediated cellular response, said method comprising detecting a modulation in current flux through a purified serotonin-gated anion channel having a polypeptide sequence encoded by a first nucleic acid sequence that hybridizes, under conditions comprising hybridization at about 42°C in about 50% formamide followed by a first wash at about 65°C in about 2X SSC sodium chloride/sodium citrate solution and about 1%

Sodium Dodecyl Sulfate, and a second wash at about 65°C in about 1X SSC sodium chloride/sodium citrate solution and about 0.1% Sodium Dodecyl Sulfate, to a second nucleic acid sequence comprising the sequence of SEQ ID NO:2, when said channel is exposed to said drug, wherein said first nucleic acid sequence encodes a serotonin-gated anion channel that selectively permits passage of anions from one side of a membrane to the other in response to binding serotonin, and wherein said modulation in current flux is indicative of said drug being associated with a serotonin-mediated cellular response.

Add new claims 30-33.

30. (New) The method of claim 22, wherein said modulation in current flux is a decrease in current flux.

31. (New) The method of claim 22, wherein said modulation in current flux is an increase in current flux.

32. (New) The method of claim 23, wherein said modulation in current flux is a decrease in current flux.

33. (New) The method of claim 23, wherein said modulation in current flux is an increase in current flux.